

CLAIMS

1. A method of producing a soft magnetic material, comprising the steps of:
preparing soft magnetic powder containing a plurality of soft magnetic particles
5 (10),
etching said soft magnetic powder to remove surfaces (10a) of said soft
magnetic particles (10), and
after said etching step, performing a first heat treatment of said soft magnetic
powder in a finely divided state at a temperature of not less than 400 °C and not more
10 than 900 °C.
2. The method of producing the soft magnetic material according to claim 1,
wherein, after said etching step, said soft magnetic powder has a particle size
distribution substantially existing only in a range of not less than 10 µm and not more
15 than 400 µm.
3. The method of producing the soft magnetic material according to claim 1,
wherein said etching step includes the step of removing surfaces (10a) of said soft
magnetic particles (10) such that an average particle diameter of the soft magnetic
20 powder prepared by said preparing step is reduced to a value in a range of not less than
90% relative to the average particle diameter.
4. The soft magnetic powder produced using the method of producing the soft
magnetic material according to claim 1, wherein
25 said soft magnetic powder has a coercivity which is reduced to a value of not
more than 70% relative to the coercivity of the soft magnetic powder prepared by said
preparing step.

5. The method of producing the soft magnetic material according to claim 1, further comprising the steps of:

after said step of performing the first heat treatment, forming an insulating film (20) on each of said plurality of soft magnetic particles (10), and

5 preparing a compact by pressure-forming said plurality of soft magnetic particles (10) each having said insulating film (20) formed thereon.

6. The method of producing the soft magnetic material according to claim 5, further comprising the step of adding organic matter (40) to said soft magnetic powder
10 before said step of preparing the compact.

7. The method of producing the soft magnetic material according to claim 5, further comprising the step of performing a second heat treatment of said compact at a temperature of not less than 30 °C and less than a thermal decomposition temperature of
15 said insulating film (20).

8. A dust core produced using the method of producing the soft magnetic material according to claim 7, wherein said dust core has a coercivity of not more than $1.0 \times 10^2 \text{ A/m}$.